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Case Report

Teratoma of the greater omentum: An extremely rare case report

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Abstract
Although mature cystic teratomas or dermoid cysts are common ovarian tumors, the extragonadal site is extremely low. The most common extragonadal site to find these tumors is the greater omentum. Reports reveal that only 32 cases of teratoma of the greater omentum have been published to date. We report an extremely rare case of mature cystic teratoma of the omentum in a 51-year-old woman who presented with nonspecific lower abdominal pain. After imaging with contrast-enhanced abdominal CT, the patient underwent cystectomy for the omental teratoma.

Keywords
Teratoma; Dermoid; Omentum; Omental teratoma; Computed tomography

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Introduction

Mature cystic teratomas, also known as dermoid cysts are the most common benign tumors of the ovary. On the other hand, extragonadal teratomas are reported to be extremely rare and they are typically found in the greater omentum [1]. To the best of our knowledge, 32 cases of teratoma of the greater omentum have been published to date. Mature cystic teratomas are encapsulated tumors with mature tissue or organ components. They are composed of well-differentiated derivatives from at least two of three germ cell layers (i.e. ectoderm, mesoderm and endoderm). It is known that these tumors arise from the germ cells originating in the mature gonads [1, 2]. Reports suggest that primary omental teratomas are seen more often in females than males with a ratio of 1/12 (male to female ratio), pointing to a relation with female reproductive system [2, 3, 4]. During early fetal life, germ cells migrate along the route of mesentery toward the genital ridge, and this may explain the extragonadal site (e.g. omentum) of teratomas [2]. Abdominal pain, gastrointestinal or genitourinary symptoms, lower extremity or genital edema are the general complaints related to omental teratoma [5]. Here we report the clinical, computed tomography (CT) and intra-operative findings of a rare case of mature cystic teratoma of greater omentum.

Case Report

A 51-year old woman with nonspecific lower abdominal pain for the past two days was admitted to the emergency department. Physical examination and laboratory findings were not remarkable. Ultrasound (US) scan showed unremarkable findings with totally normal ovaries. She was discharged with oral analgesics. The next day, the patient came over with ongoing pain and was referred to the department of general surgery for further investigation. Her physical examination was still unremarkable. The detailed gynecologic examination was also normal without any previous history of gynecologic disease or surgery. CT scan revealed a left-sided mass of 3.5x4.5 cm in the greater omentum indenting the small bowel loop (Figure 1). The mass contained fat, calcification, and cystic areas compatible with features of mature cystic teratoma. While the adnexal regions were normal and the mass had a far location from the left ovary, our primary diagnosis was extragonadal teratoma in the greater omentum.

Preoperative laboratory test results were normal. Preoperative tests for tumor markeralso did not reveal an increase in the level of cancer antigens. After a detailed clinical evaluation, the patient underwent open laparotomy. The mass was found to be embedded into the greater omentum (Figure 2). Cystectomy was performed and the postoperative course of the patient was uneventful. The adnexal regions were also evaluated during open laparoscopy, and the ovaries were found normal. The pathologic report revealed features consistent with benign cystic teratoma attached to the greater omentum, without any remnants of ovarian stroma.

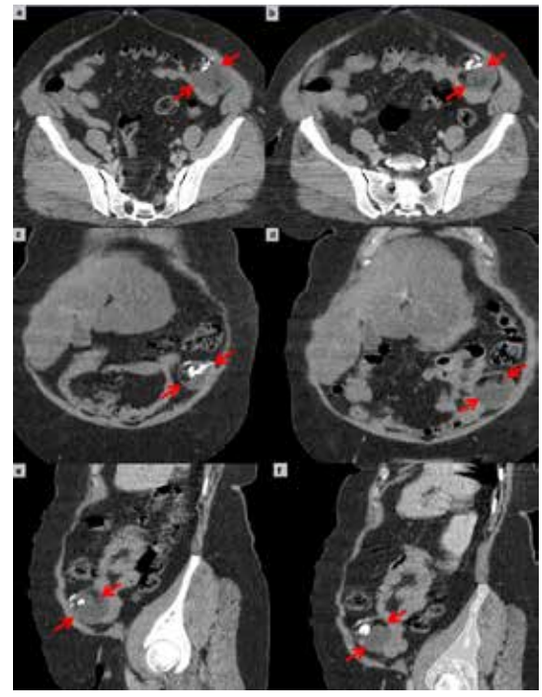

Figure 1. Red arrows show the omental location of the teratoma. Cystic components, fatty tissue and coarse calcifications were easily observed in the abdominal CT study.

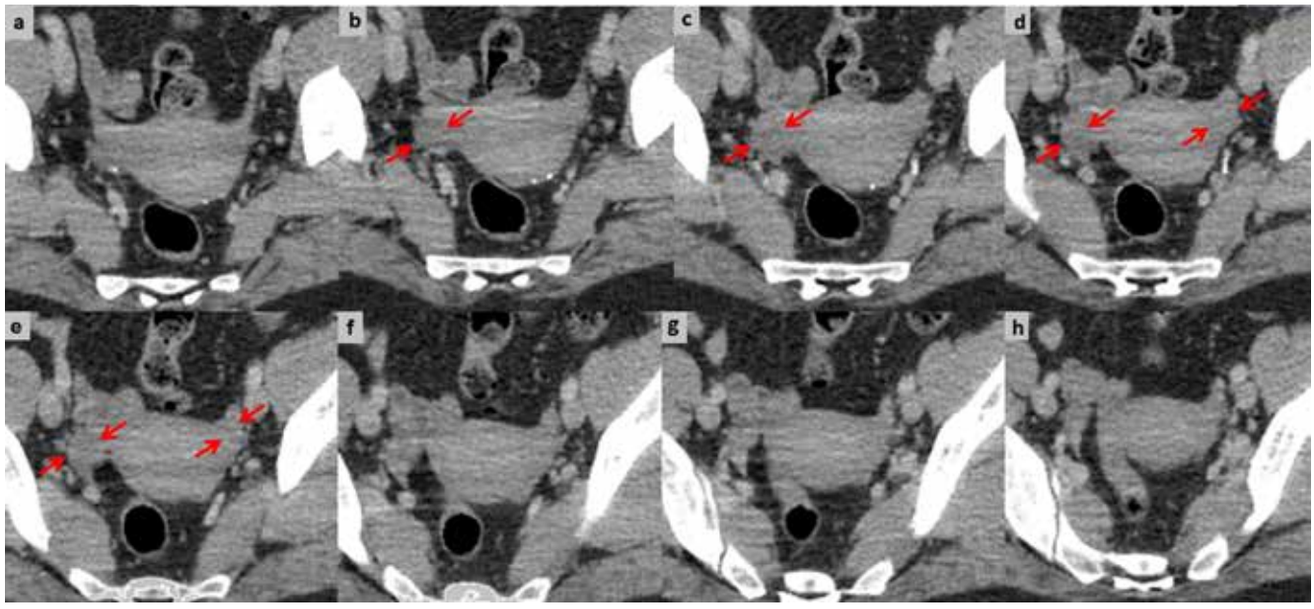

Figure 2. Red arrows indicate no obvious lesion in both ovaries. Intraoperative observation also confirmed the CT scan.

Figure 3. The intraoperative and postoperative appearance of the lesion

Discussion

The causes of extragonadal teratomas are poorly understood, but several mechanisms have been proposed. There are three basic theories to explain the extragonadal mature cystic teratomas as follows: 1) primary teratomas originating from displaced germ cells, 2) implantation into the extragonadal site from autoamputation of ovarian teratoma, and 3) teratomas arising in a supernumerary ovary. The studies to date proposed that the omentum was the primary location of the extragonadal teratomas for 32 reported cases, thought to occur with a mechanism of autoamputation [6]. Furthermore, reports suggest that there is a lack of histologic evidence supporting the first and third theories [2, 6]. The literature review revealed an ipsilateral absent or atrophic ovary in the reported 30 cases, supporting the theory of autoamputation [7]. In 22 of those cases, the teratoma contained microscopic ovarian tissue, bringing this theory to the fore. In the reported four cases, omental teratoma and ovarian teratoma were coexisting [1, 7]. In another report, a right-sided extragonadal teratoma near the right ovary was shown [6]. Despite the lack of ovarian tissue in the histologic examination and normal right ovary, they suggested that this case matched the second theory aforementioned due to the close proximity of the right ovary. Autoamputation was thought to result from a primary ovarian teratoma, probably undergoing torsion. Ovarian torsion caused by mature cystic teratoma is quite common, and when complicated with necrosis of the torsed ovary, it can result in ovarian tissue along with cells from the teratoma reimplanting into the greater omentum as an extragonadal teratoma [7]. Reviewing the literature, it can be strongly hypothesized that ovarian atrophy might be the result of past ovary torsion. Because of its special role in the inflammation or infectious defense processes, the omentum might be the potential primary site of for reimplantation of the autoamputated ovarian teratoma [1, 6, 7].

However, it is not clear how to distinguish autoamputation from the other theories, and we think that other theories should also be considered, as shown in the present case. In our case, both of the ovaries were normal without any space-occupying lesion (Figure 3). This was also confirmed during laparotomy. Microscopy of the patologic specimen showed mature cystic teratoma without any ovarian tissue component. This fact might point to the first theory above mentioned. Besides, the lack of ovarian stroma in the present case might be a clue to exclude the possibility of parasitic ovarian tissue related to previous gynecologic surgeries or supernumerary ovary as described in the literature [8]. However, there is still a necessity for other studies with further evidences to reveal the exact mechanism of extragonadal teratomas.

Ultrasound is generally the initial imaging tool in the diagnosis of mature ovarian cystic teratomas. CT and magnetic resonance imaging (MRI) are the problem solving imaging tools to further evaluate the adnexal masses. Besides, MRI with its high soft tissue resolution has the advantage to characterize the primary ovarian masses, to depict the adnexal anatomy, and to help in the diagnosis of ovary torsion and its possible complications [9]. It is clear that MRI is also an efficient imaging method for diagnosing extragonadal teratomas as well as scanning the ovaries at the same time. However, it was not possible to obtain an MRI scan in our claustrophobic patient. CT could clearly show the features of mature cystic teratoma with normal adnexal regions in the present case.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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